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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,474	04/13/2004	Masamichi Saito	9281-4798	4590

7590 03/25/2009
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Chicago, IL 60610

EXAMINER

RENNER, CRAIG A

ART UNIT	PAPER NUMBER
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2627

MAIL DATE	DELIVERY MODE
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03/25/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/823,474	Applicant(s) SAITO ET AL.	
	Examiner Craig A. Renner	Art Unit 2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 March 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-20 is/are pending in the application.
- 4a) Of the above claim(s) 4-6 and 12-14 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7, 8 and 15-20 is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 9-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06 March 2009 has been entered.

Specification

2. The disclosure is objected to because of the following informalities:

In line 6 of claim 18 and line 2 of claim 20, each instance of "the first and second pinned magnetic layers" should be changed to --the first and second pinned magnetic sublayers-- in order to more clearly refer back to those set forth in line 9 of independent claim 17. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatani et al. (US 5,390,061) in view of Lin et al. (US 6,127,053).

Nakatani et al. (US 5,390,061) teaches a CPP giant magnetoresistive head comprising lower and upper shield layers (15 and 16, for instance) with a predetermined shield distance therebetween (as shown in FIG. 10, for instance); and a giant magnetoresistive element disposed between the upper and lower shield layers (as shown in FIG. 10, for instance), the giant magnetoresistive element having a group of adjacent parallel layers (includes layers 2, 3 and 4, for instance), the group comprising a pinned magnetic layer (2, see lines 13-16 in column 9, for instance, i.e., the larger coercive force of layer 2 results in layer 2 being pinned to at least some extent), a free magnetic layer (4) and a nonmagnetic layer (3) disposed between the pinned magnetic layer and the free magnetic layer (as shown in FIG. 1, for instance), the CPP giant magnetoresistive head being free of an antiferromagnetic layer between the upper and lower shield layers that passes generally perpendicularly through a vertical plane drawn through the group of adjacent parallel layers in a thickness direction (as shown in FIG. 1, for instance), wherein a current flows in a direction of the vertical plane (as shown in FIG. 1, for instance, i.e., due to the electrode arrangement), wherein an end of the pinned magnetic layer is exposed at a surface facing a recording medium (as shown in FIG. 1, for instance) [**as per claim 9**]; wherein a dimension of the pinned magnetic layer in a height direction is larger than the dimension in a track width direction (as shown in FIG. 1, for instance) [**as per claim 10**]; and wherein the pinned magnetic layer extends to a rear of the nonmagnetic layer and the free magnetic layer in a height direction (as

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shown in FIG. 1, for instance) [**as per claim 1**]. Nakatani et al. (US 5,390,061), however, remains silent as to the pinned magnetic layer comprising a “magnetic material having a positive magnetostriction constant” and including a “laminated ferrimagnetic structure comprising a first pinned magnetic layer and a second pinned magnetic layer which are laminated with a nonmagnetic intermediate layer disposed therebetween.”

Lin et al. (US 6,127,053) teaches a pinned magnetic layer (730, FIG. 7c, for instance) comprising a magnetic material (lines 23-25 and 31-34 in column 11, for instance) having a positive magnetostriction constant (“Co-Fe” and “Ni-Fe-Nb” both have a positive magnetostriction constant, see the ABSTRACT, for instance) and including a laminated ferrimagnetic structure (730) comprising a first pinned magnetic layer (734) and a second pinned magnetic layer (736) which are laminated with a nonmagnetic intermediate layer (735) disposed therebetween in the same field of endeavor for the purpose of enabling enhanced reference layer magnetization by inducing uniaxial anisotropy. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the pinned magnetic layer of Nakatani et al. (US 5,390,061) comprise a magnetic material having a positive magnetostriction constant and include a laminated ferrimagnetic structure comprising a first pinned magnetic layer and a second pinned magnetic layer which are laminated with a nonmagnetic intermediate layer disposed therebetween as taught by Lin et al. (US 6,127,053). The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the pinned magnetic layer of Nakatani et al. (US 5,390,061) comprise a magnetic material having a positive magnetostriction constant and include a laminated ferrimagnetic structure comprising a first pinned magnetic layer and a second pinned magnetic layer which are laminated with a nonmagnetic intermediate layer disposed therebetween as taught by Lin et al. (US 6,127,053) since such enables enhanced reference layer magnetization by inducing uniaxial anisotropy.

5. Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakatani et al. (US 5,390,061) in view of Lin et al. (US 6,127,053) as applied to claims 1 and 9 above, and further in view of Inomata et al. (US 6,381,171), for instance.

Nakatani et al. (US 5,390,061) in view of Lin et al. (US 6,127,053) teach the head as detailed in paragraph 4, supra. Nakatani et al. (US 5,390,061) in view of Lin et al. (US 6,127,053), however, remain silent as to “wherein the first and second pinned magnetic layers partially or entirely comprise Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is at least one element of Pt, Pd, Mn, Si, Au, and Ag), or Co₂MnY (wherein Y is at least one element of Ge, Si, Sn, and Al).”

Inomata et al. (US 6,381,171), for instance, shows that at least one of Fe-Co-Cu (wherein Fe > 10 atomic percent, Co > 30 atomic percent, and Cu > 5 atomic percent), Fe-Co-Cu-X (wherein X is at least one element of Pt, Pd, Mn, Si, Au, and Ag), and Co₂MnY (wherein Y is at least one element of Ge, Si, Sn, and Al) is a notoriously old

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and well known pinned magnetic layer material in the art (line 66 in column 13 thru line 5 in column 14 taken in conjunction with line 42 in column 10, for instance, i.e. pinned magnetic layer 1 may be made of "Co₂MnGe," for instance). It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had the first and second pinned magnetic layers of Nakatani et al. (US 5,390,061) in view of Lin et al. (US 6,127,053) partially or entirely comprise Co₂MnGe, for instance, as shown by Inomata et al. (US 6,381,171), for instance. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had the first and second pinned magnetic layers of Nakatani et al. (US 5,390,061) in view of Lin et al. (US 6,127,053) partially or entirely comprise Co₂MnGe, for instance, as shown by Inomata et al. (US 6,381,171) since such is a notoriously old and well known pinned magnetic layer material in the art as shown by Inomata et al. (US 6,381,171), and since selecting a known material on the basis of its suitability for the intended use is within the level of ordinary skill in the art, *In re Leshin*, 125 USPQ 416 (CCPA 1960).

Allowable Subject Matter

6. Claims 7, 8 and 15-20 are allowable over the prior art of record.

Response to Arguments

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is (571) 272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, A. L. Wellington can be reached on (571) 272-4483. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Craig A. Renner/
Primary Examiner, Art Unit 2627

CAR